Just Around the River Bend

An Ecological and Habitat Vulnerability Assessment of the White River Basin

Office of Research and Development

National Exposure Research Laboratory (NERL)

Environmental Sciences Division

- and -

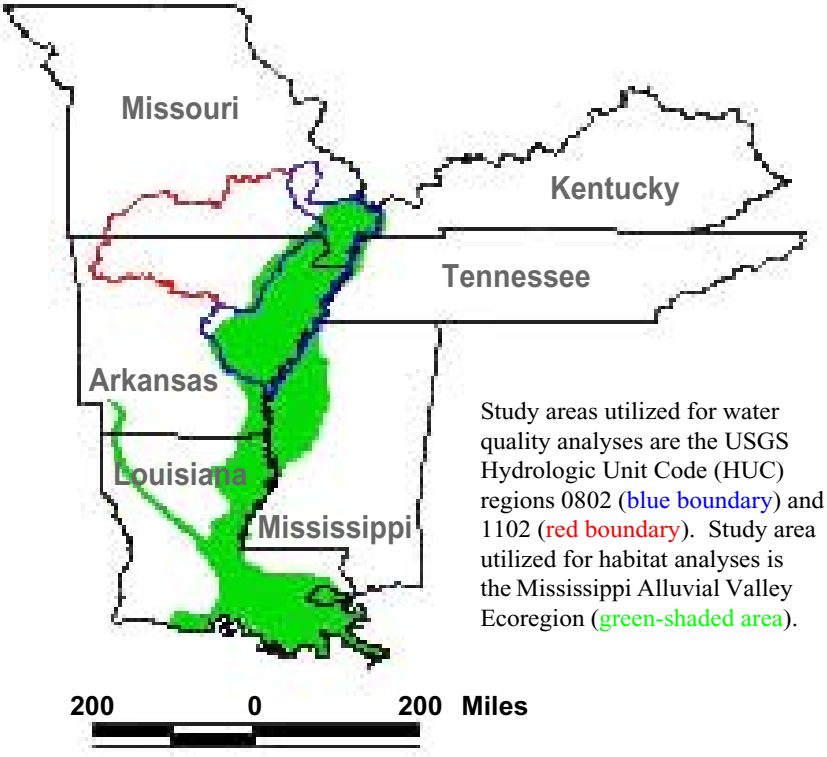
USEPA Region 6

What's Our Plan?

The Lower Mississippi River watersheds have undergone tremendous change in the past and the cumulative effects of these changes are unknown. This study is the first step in learning how past landscape alterations have affected hydrologic, chemical and biological characteristics of the White River Basin, and how potential alterations may influence future water quality and the biological integrity of the ecosystem. Measuring these relationships will allow for informed recommendations about future land use in the White River Basin and the Mississippi River watershed in general.

Why Explore?

The White River flows through the Mississippi Alluvial Valley and is one of the most important areas of bottomland hardwood wetlands in the world. The aquatic plant communities within these wetlands are among the most biologically diverse and productive systems in the world. The streams and wetlands in the White River Basin are unique in that the largest concentration of mallard ducks in North America winter there, they provide critical habitat for other plants and animals, and provide important services such as water supplies, hunting, and recreation area, to residents of the area.



Study areas utilized for water quality analyses are the USGS Hydrologic Unit Code (HUC) regions 0802 (blue boundary) and 1102 (red boundary). Study area utilized for habitat analyses is the Mississippi Alluvial Valley Ecoregion (green-shaded area).

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Looking Toward the Future

There are several large-scale projects that are currently under review for implementation in the White River Basin. Each of the projects has the potential to change the characteristics of the surrounding landscape. The planned projects includes maintenance of a navigation channel that requires the modifications to the bed of the Lower White River; agricultural irrigation projects that involve increasing the removal of surface water from the White River; modification of reservoir releases; reforestation in the Mississippi River Valley; and roadway and bridge construction projects. Such projects have the potential for altering river hydrology, wetland hydrology, water quality and the quality of habitat for a variety of organisms in the region. As a result of these projects and other projected development pressures on the ecology of the region, the Mississippi River Alluvial Plain and the White River Basin are currently the focus of heightened US Environmental Protection Agency research.

WHAT WE WILL DISCOVER...

- The range of landscape stressors in the study area as evidenced by historical land-cover change (early 1970's to 1990's)
- The historical ecological relationships between landscape stressor(s) and the present chemical and physical status of water bodies and wetlands in the study area
- The historical ecological relationships between landscape stressor(s) and the status of habitat use and/or suitability by specific taxa (e.g. mallard duck, black bear, least tern, wetland plants) in the study area
- The chemical and physical status of water bodies and wetlands in the future, given specific changes in future land use and land cover
- Habitat use and/or suitability for specific species in the future, given the specific changes in future land use and land cover

MILESTONES

- 2000: Land cover classification
- 2001: Models developed for "future scenarios"
- 2002: Publication of final results

RELATED ECOLOGICAL PROJECTS AND GROUPS

- The Lower Mississippi River Conservation Committee
- The EPA Gulf of Mexico Program
- Lower Mississippi Delta Initiative
- The US Geological Survey National Water Quality Assessment and National Gap Analysis Programs

PARTICIPANTS

- Landscape Ecology Branch (USEPA/ORD/NERL/ESD) - Las Vegas, NV
- U.S. Environmental Protection Agency, Region 6 - Dallas, TX

For this effort and other NERL science projects, visit our website at http://www.epa.gov/nerl/